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**Two new species of *Laccophilus* from Sulawesi
with notes on other Laccophilinae in Southeast Asia
(Coleoptera: Dytiscidae)**

M. TOLEDO, L. HENDRICH & J. ŠTASTNÝ

A b s t r a c t : Two new species of *Laccophilus* LEACH are described from Indonesia (Sulawesi): *L. seseanus* sp.n. and *L. pseudanticatus* sp.n. The latter clearly belongs to the *siamensis*-group, close to *L. anticatus* SHARP, whereas the systematic position of *L. seseanus* sp.n. is unclear as it shares characters of two different species-groups (sensu BRANCUCCI 1983): the *complicatus*-group for size, reticulation and dorsal patterns; and the *kobaensis*-group for the shape of median lobe of aedeagus. Altogether eight species of *Laccophilus* are now reported from Sulawesi. The mainly palaeartic species *Laccophilus minutus* (LINNAEUS 1758) is newly recorded for the Philippines, and *Laccosternus grouvellei* (RÉGIMBART 1895) is here recorded from Western Malaysia, and its known distribution is mapped. Figures of the habitus, and male diagnostic characters are given for the new taxa. Some details about the habitat of *L. seseanus* sp.n. are presented.

K e y w o r d s : Dytiscidae, Southeast Asia, Sulawesi, West Malaysia, *Laccophilus*, *Laccosternus*, new species, distribution.

Introduction

In the Oriental and Australasian realms the subfamily Laccophilinae is represented by five genera. The most specious genera are *Laccophilus* LEACH, *Neptosternus* SHARP and *Philaccolilus* GUIGNOT, the latter endemic to New Guinea (BALKE et al. 2000), while the others are composed of one or two species (NILSSON 2001). The least known genus is surely *Laccosternus* BRANCUCCI 1983, with a single species *L. grouvellei* (RÉGIMBART 1895) reported from Northern Vietnam and Sumatra [Indonesia]. *Laccophilus* is certainly one of the largest and widespread genera of the family Dytiscidae with 254 species worldwide, mainly distributed in the tropics (BALKE et al. 1997, NILSSON 2001).

The Oriental and Australasian species of this genus have been revised by BRANCUCCI (1983b), with a total number of 59 species recognised, classified in ten species-groups. More recently, additional works improved the knowledge of this genus in the Oriental region and New Guinea, with a total of nine additional species described and new data on the distribution and taxonomy of other taxa (ROCCHI 1986, GUEORGUIEV & ROCCHI 1992, BALKE & HENDRICH 1997, BALKE et al. 1997, HENDRICH & BALKE 1995, 1998; BALKE et al. 1998). In the present paper two additional new species of *Laccophilus* are described from Indonesia (Sulawesi) and new Southeast Asian records are given for *Laccophilus minutus* (LINNAEUS 1758) and *Laccosternus grouvellei* (RÉGIMBART 1895).

Acronyms

Specimens mentioned in this work are deposited in several collections which are abbreviated in the text as follows:

CJS	Collection Jaroslav Štastný, Liberec, Czech Republic
CLH	Collection Lars Hendrich, Berlin, Germany
MTB	Collection of Mario Toledo, Brescia, Italy
NMW	Naturhistorisches Museum Wien, Vienna, Austria
PMB	Collection of Paolo Mazzoldi, Brescia, Italy

Taxonomy

The following species of the genus *Laccophilus* are reported from Sulawesi:

<i>L. clarki</i> SHARP 1882.....	Sulawesi, New Guinea and Australia
<i>L. newtoni</i> BRANCUCCI 1983.....	Sulawesi
<i>L. parvulus parvulus</i> AUBÉ 1838.....	Oriental realm
<i>L. pseudanticatus</i> sp.n.....	Sulawesi
<i>L. ritsemae</i> RÉGIMBART 1880	Southeast Asia
<i>L. seseanus</i> sp.n.....	Sulawesi
<i>L. sharpi</i> RÉGIMBART 1889	Palearctic, Oriental and Australasian realms
<i>L. uniformis</i> MOTSCHULSKY 1859.....	Oriental realm

1. *Laccophilus pseudanticatus* sp.n.

Type locality: 20 km NE Bantimurung, South Sulawesi, Indonesia.

Holotype: Male: "S-Sulawesi 20 km NE Bantimurung 30.III.1999 at light Becvar & Zabransky leg." (NMW).

Paratypes: 5 ex., same data as holotype (1 male in CLH; 2 males in MTB, 2 males in PMB).

Diagnosis: Habitus (Fig. 1). Total length 3.75 mm – 3.80 mm; maximum width 2.05 mm – 2.10 mm. Elongate-oval, very poorly convex, glossy; dorsal coloration reddish-yellow; elytra with a large, pitch-brown, transverse fascia; vaguely and irregularly darkened on the apical third.

Head: Reddish-yellow, without markings. Reticulation double, with smaller meshes included in larger and irregular ones; few, punctuation composed of very small and fine dots which are hardly visible and sparse on the surface. Ventral side of head and antennae testaceous.

Pronotum: Short, with lateral sides weakly converging anteriorly. Coloration completely testaceous, except for the inner margin which is slightly and very finely darkened. Reticulation as on head, slightly more impressed, especially regarding the larger meshes. Very few small dots are visible between the meshes.

Elytra: Shining, elongate, with maximum width at about the middle of their length. Coloration testaceous, with a large, pitch-brown transverse band, V-shaped, with vertex, along the suture, directed to the apex of elytra. The sides of this band are very irregular, making digitations directed to the base of elytra and to the apex. On the last third there are confused and irregular dark patterns, becoming lighter near the apex. Reticulation as on pronotum, but with smaller meshes more discernible. Small dots arranged in a some-

what irregular longitudinal file are visible on the disc; these becomes larger and more numerous close to the apex of each elytra.

Ventral side: Shiny, uniformly reddish-yellow, with reticulation obsolete. Metacoxal files absent. Fore and mid legs uniformly testaceous; hind legs reddish-yellow.

Male: Apex of last sternite sinuate (Fig. 3), almost symmetric, with a small medial point. Median lobe of aedeagus as in Fig. 5, formed by two branches: the fore one slender and ending with a large apical notch; the hind one stout and shorter. Parameres as in Fig. 10.

Female: Unknown.

Distribution: Only known from the type locality (South Sulawesi, Bantimurung).

Etymology: For its closeness with *Laccophilus anticatus* SHARP.

Habitat: Unknown.

Affinities: This species clearly belongs to the *siamensis*-group (sensu BRANCUCCI 1983). The peculiar patterns on the elytra are very distinctive, but the male genitalia are close to *L. anticatus anticatus* SHARP 1890, reported from Southern India, Sri Lanka, Bangladesh, and *anticatus translucidus* RÉGIMBART 1899, from Myanmar. Nevertheless a comparison with specimens of *L. anticatus anticatus* from South India shows important differences in the shape of the median lobe of aedeagus of the two species (Figs 5, 6; 8,9), in both composed of two branches separate at the base, as in most members of the *siamensis*-group:

1) In *L. pseudanticatus* n.sp. the fore branch is abruptly curved from about the second third until the apical notch; the base of this apical notch does not protrude from the outline of the branch. The hind branch has a large lateral tubercle in the basal half and becomes thinner in the apical portion (Fig. 8).

2) In *L. anticatus anticatus* the anterior branch is straight for about half of its length and then bent anteriorly; the base of the apical notch protrudes clearly from the outline of the branch. The posterior branch has a less visible keel and apically is as thick as the base (Fig. 9). Differences are visible also in the parameres (Figs 10-11).

2. *Laccophilus seseanus* sp.n.

Type locality: Southern slope of Mt. Sesean 1300-1600 m, Rantepao env., South Sulawesi, Indonesia.

Holotype: Male: "S-SULAWESI Rantepao env. 3.IV.1999 Becvar & Zabransky leg.", "S. slope of Mt. Sesean 1300 - 1600 m" (NMW).

Paratypes: 11 ex., same data as holotype (2 males and 2 females in CLH; 1 male and 2 females in MTB; 2 males and 2 females in PMB); 2 males and 9 females: "SULAWESI S, Rantepao env., Bututumonga [S. slope of Mt. Sesean], J. Štastný leg., 6.10.2001" (CJS); 1 male and 1 female: "SULAWESI C, Togian isl. Malenge, 13.-15.10.2001, pools in prim. forest, J. Štastný leg." (CJS).

Diagnosis: Habitus (Fig. 2). Total length 3.90 mm – 4.15 mm; maximum width 2.20 – 2.25 mm. Regularly oval, slightly convex, smooth; dorsal coloration reddish-yellow on pronotum and head, testaceous on elytra, which have longitudinal dark vermiculations.

H e a d : Reddish-yellow, without markings; reticulation simple, composed of quite regular, small, rounded meshes; no dots are visible on the surface. Ventral side of head and antennae testaceous.

P r o n o t u m : Reddish-yellow; medial portion of both anterior and posterior sides with a thick dark band, the posterior of which is divided in two lobes. Reticulation as on head, slightly more impressed and, especially near the lateral sides, apparently arranged inside larger and irregular meshes. Few, very small and scattered dots are visible on the disc, plus some small and shallow grooves along the base of lateral sides.

E l y t r a : Maximum width near the end of their basal third. Testaceous; dark patterns composed of five longitudinal, dark-brown and simple vermiculations, starting from a large, transverse, yellow band at the homera and running almost up to the last fourth of each elytron, where they gradually fade into yellow. These vermiculations are linked to each other by lateral connections which are somewhat broken near the base of the last third of elytra, leaving an irregular yellow marking. A small, irregular band is present at the base of each elytron. Reticulation, as on pronotum, composed by regular meshes, small and rounded. Small and fine dots, arranged in two irregular files are visible on the anterior half of each elytra; on the posterior half, instead, are present numerous larger and more impressed dots.

V e n t r a l s i d e : Shiny, reddish-brown, faded on metacoxal process, medial part of metasternum and apex of sternites; prosternum, proepisterna, hypomera and epipleurs yellow. Reticulation very poorly impressed; a series of longitudinal scratches is visible on the first sternite, especially near the metacoxal process. Metacoxal files absent. Fore and mid legs uniformly reddish-yellow; hind legs a bit darker.

M a l e : Apex of last sternite (Fig. 4) with a circular notch, behind which the sternite makes a triangular thickness. The position of this notch is almost medial, but, in ventral view, the right side of sternite looks slightly more developed than the left side. Oblique scratches are present on both sides of sternites. Median lobe of aedeagus (Fig. 7) large, robust and somewhat twisted when viewed laterally: in dorsal view flat, expanded in the second half and abruptly narrowed apically, ending with a small hook.

F e m a l e : Duller, due to the slightly more impressed reticulation on elytra. Last sternite normally ending, without notch.

D i s t r i b u t i o n : Central and Southern Sulawesi (Rantepao, Mt. Sesean and Togian Islands).

E t y m o l o g y : Name derived from the type locality.

H a b i t a t : Most specimens of *Laccophilus seseanus* n.sp. were found on the southern slope of Mt. Sesean in an open landscape with pastures and rice fields at about 1600 m a.s.l. They inhabited marginal parts of flooded rice fields with sparse submerged vegetation (Fig. 12). One male and one female were found in a small stream with a volcanic gravel bed. The specimens from the Togian islands were collected in a babirusa wallow near the edge of a primary forest.

A f f i n i t i e s : In contrast to the preceding species, the taxonomic position of *L. seseanus* is quite problematic: following BRANCUCCI's key for the species-groups, *L. seseanus* n.sp. falls within the *complicatus*-group, due to a combination of size, reticulation on elytra and dorsal patterns; these patterns being somewhat similar to those of the Australian *L. clarki* SHARP. Habitus and size are also very close to *L. baturitiensis* HENDRICH & BALKE, recently described from Bali, which belongs to the *minusus*-group.

The shape of median lobe of the aedeagus resembles species of the *kobensis*-group, although habitus and sizes of these species are very different.

This may suggest that the present grouping of species within *Laccophilus*, as adopted in BRANCUCCI (1983b), mostly based on characters such as dorsal reticulation and colour patterns, is not to be considered definitive. A revised classification is needed, based also on other features such as the median lobe of aedeagus and other sexual characters both of males and females.

Additional records of *Laccophilus* species from Sulawesi

Laccophilus parvulus parvulus AUBÉ 1838

Laccophilus parvulus parvulus AUBÉ 1838: BRANCUCCI 1983b: 355 (descr.), HENDRICH & BALKE 1995: 42.

M a t e r i a l e x a m i n e d : 2 males: "SULAWESI S, Mamasa env. 4 km W., small pools with plants, J. Štastný leg., 1.10.2001" (CJS); 5 males and 1 female: "SULAWESI S, Rantepao env., Bututumonga [S. slope of Mt. Sesean], J. Štastný leg., 6.10.2001" (CJS); 1 male and 2 females: "SULAWESI C, Poso lake, Pendolo env., J. Štastný leg., 9.10.2001" (CJS); 1 male and 1 female: "SULAWESI N, Bogani Nani Wartabone, Kosinggolan env., 19.X.2001 Štastný leg." (CJS); 1 male: "SULAWESI N, 23 km E Kotamobagu, Danau Moot, pools, 21.X.2001, J. Štastný leg." (CJS).

Laccophilus ritsemae RÉGIMBART 1880

Laccophilus ritsemae RÉGIMBART 1880: BRANCUCCI 1983b: 335 (descr.), HENDRICH & BALKE 1995: 42, BALKE et al. 2002 : 974.

M a t e r i a l e x a m i n e d : 9 ex.: "SULAWESI S, Mamasa env. 4 km W., small pools with plants, J. Štastný leg., 1.10.2001" (CJS); 4 ex.: "SULAWESI C, Poso lake, Pendolo env., J. Štastný leg., 9.10.2001" (CJS); 1 male, 2 females: "SULAWESI S, Rantepao env., Bututumonga [S. slope of Mt. Sesean], J. Štastný leg., 6.10.2001" (CJS). These are the first reliable records from Sulawesi.

Laccophilus sharpi RÉGIMBART 1889

Laccophilus sharpi RÉGIMBART 1889: BRANCUCCI 1983b: 265 (descr.), NILSSON 1995: 71; HENDRICH & BALKE 1995: 43.

M a t e r i a l e x a m i n e d : 3 males and 2 females: "SULAWESI C, Togian isl. Malenge, 13.-15.10.2001, pools in prim. forest, J. Štastný leg." (CJS); 2 females: "SULAWESI N, Bogani Nani Wartabone, Kosinggolan env., 19.X.2001 J. Štastný leg." (CJS).

Laccophilus uniformis MOTSCHULSKY 1859

Laccophilus uniformis MOTSCHULSKY 1859: BRANCUCCI 1983b: 366 (descr.), NILSSON 1995: 71, BALKE et al. 2002 : 974.

M a t e r i a l e x a m i n e d : 4 males and 7 females: "SULAWESI C, Poso lake, Pendolo env., J. Štastný leg., 9.10.2001" (CJS). First record for Sulawesi.

Faunistics and new records of Laccophilinae in SE Asia

Laccophilus minutus (LINNAEUS 1758)

Laccophilus minutus (LINNAEUS 1758): BRANCUCCI 1983b: 265 (descr.), NILSSON 1995: 68; HENDRICH & BALKE 1998: 437-442.

Material examined: 1 male: "Philippines, Luzon: Lagunas Mt. Makiling, stream above Mad Springs, 700m, 22.XI.1995, J. Kodada leg." (NMW); 150 specimens from various localities in Germany, Spain and France (CLH).

The single specimen from the Philippines reported here does not differ in size, body shape, colour of elytra or form of median lobe from any European specimens examined.

Distribution: A widespread Palaearctic species that also enters parts of the Oriental Region. It is reported from Southern China, Sumatra and Java [Indonesia] (BRANCUCCI 1983b, HENDRICH & BALKE 1998). This is the first record for the Philippines.

Habitat: In Europe a lentic species which occurs mainly in open, more eutrophic, permanent ponds, ditches, slow flowing rivers and small lakes (NILSSON & HOLMEN 1995), whereas in SE Asia the species has been recorded from a stream in a hilly region (700 m) of the Philippines. There are no records about the habitat of the species on Java and Sumatra [Indonesia] but both localities: Soekaboemie/Java and Bandar Baroe/Sumatra (BRANCUCCI 1983b), are situated in hilly regions as well, so *L. minutus* is most probably lotic in SE Asia.

Laccosternus grouvellei (RÉGIMBART 1895)

Laccophilus grouvellei RÉGIMBART 1895: 344 (orig. descr.).

Laccosternus grouvellei (RÉGIMBART 1895): BRANCUCCI 1983a: 252 (n.comb.).

Material examined: 1 female: "West Malaysia, Perak, 25 km NE of Ipoh, 1200 m, Banjaran Titi Wangsa mts., Korbu mt. 1-15.IV.2000 P. Cechovský leg." (NMW).

This is the only species of *Laccosternus* BRANCUCCI and is one of the most rare and poorly known Laccophilinae in SE Asia. Only two females from Sumatra (type locality) and Vietnam were known before. A third female has been discovered in the collections of the Natural History Museum of Vienna, collected in West Malaysia. Unfortunately the male still remains unknown.

The specimen in Vienna does not differ substantially from the diagnosis given in BRANCUCCI (1983a: 252) (total length 2.5 mm, maximum width 1.37 mm, against 2.4 mm given in the above paper), except for the less wide subbasal pale band on elytra.

Distribution: The three specimens known so far are recorded from three different localities far away from each other (Fig. 13). The type was found in a consignment of tobacco coming from Sumatra, while the second specimen – standing in the Hungarian Natural History Museum, Budapest – comes from Vietnam: Toung linh, near Phy ly, collected at light, 24-28.V.1966, Gy. Topál leg. (BRANCUCCI 1983a). The third specimen from Malaysia mentioned above should confirm that it is a rather widespread but rarely collected Indomalayan species, and nothing is known of its habitat.

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Zusammenfassung

In der vorliegenden Arbeit werden zwei Schwimmkäferarten der Gattung *Laccophilus* aus dem Süden und dem Zentrum der Insel Sulawesi [Indonesien] beschrieben: *Laccophilus pseudanticatus* [Bantimurung] und *L. seseanus* [Rantepao, Mount Sesean und Togian Inseln]. Erstere Art gehört in die *siamensis*-Gruppe (sensu BRANCUCCI 1983) und steht dem *L. anticatus* sehr nahe; letztere kann durch Größe, Flügeldeckenskulptur und Färbung der Oberseite entweder der *complicatus*- oder, durch die Form des Medianlobus des Aedeagus, der *kobaensis*-Gruppe (sensu BRANCUCCI 1983) zugeordnet werden. Beide Arten sind durch den Bau des Medianlobus gut gekennzeichnet. Damit sind bisher acht Arten der Gattung *Laccophilus* von Sulawesi bekannt geworden. Der in ganz Südostasien sehr seltene *Laccosternus grouvellei* wird zum ersten Mal für die Malaysische Halbinsel gemeldet und der in der Paläarktis weit verbreitete, aber in Südostasien bisher nur von Java und Sumatra bekannte *Laccophilus minutus*, wird hier zum ersten Mal für die Philippinen [Mount Makiling, Luzon] gemeldet. Im Gegensatz zur Paläarktis, wo die Art in den verschiedensten stehenden Gewässern gefunden wird, besiedelt *L. minutus* in Südostasien nur Bäche in mittleren Höhenlagen.

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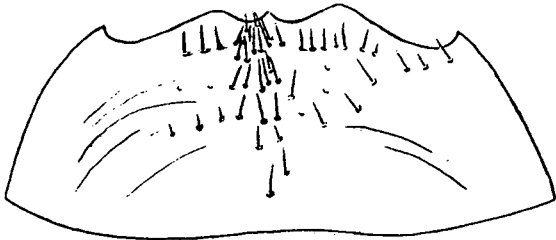


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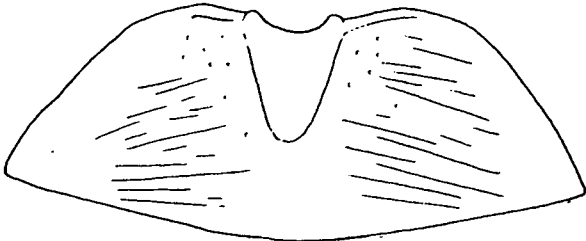
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Figs 1-2. Habitus of 1) *Laccophilus pseudanticatus* n.sp.; 2) *L. seseanus* n.sp. (scale: 1 mm)

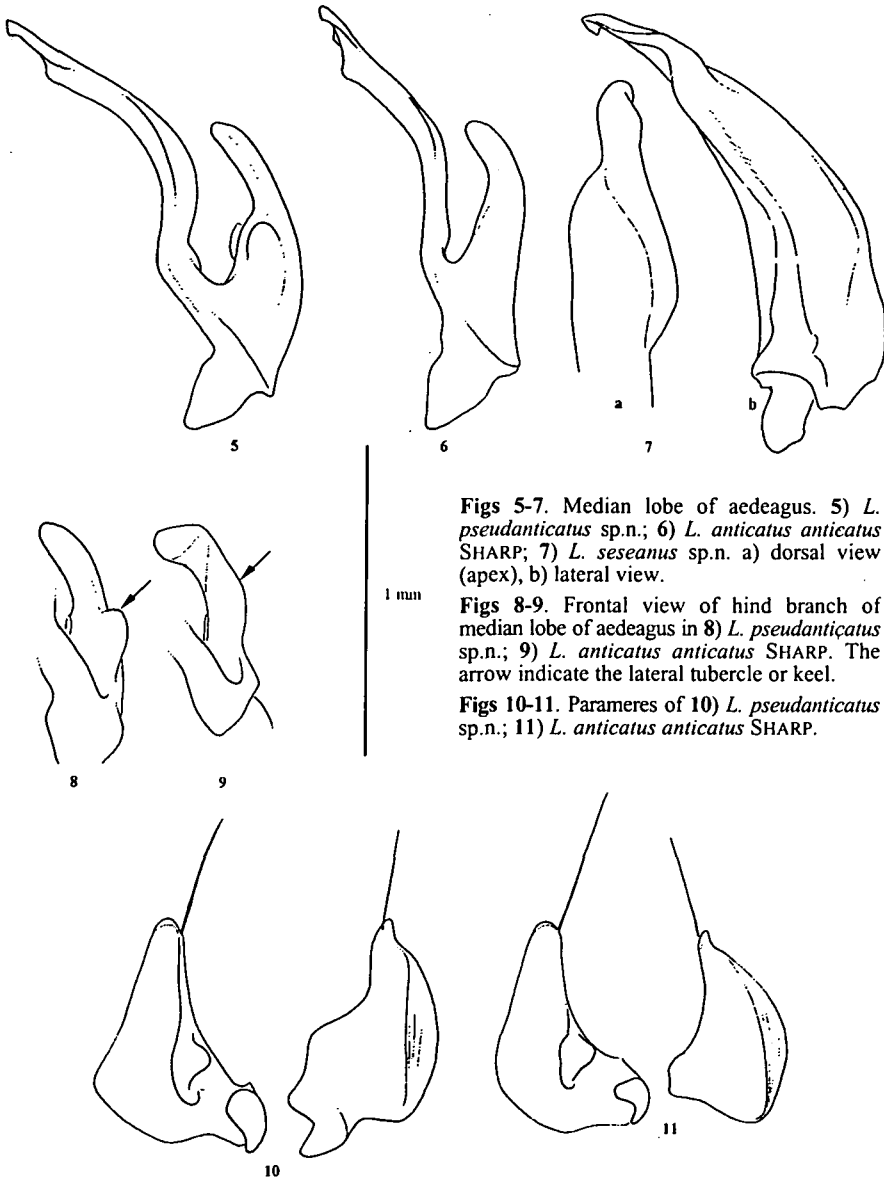
Figs 3-4. Last abdominal sternite of 3) *Laccophilus pseudanticatus* n.sp.; 4) *L. seseanus* n.sp.



3



4



Figs 5-7. Median lobe of aedeagus. 5) *L. pseudanticatus* sp.n.; 6) *L. anticatus anticatus* SHARP; 7) *L. seseanus* sp.n. a) dorsal view (apex), b) lateral view.

Figs 8-9. Frontal view of hind branch of median lobe of aedeagus in 8) *L. pseudanticatus* sp.n.; 9) *L. anticatus anticatus* SHARP. The arrow indicate the lateral tubercle or keel.

Figs 10-11. Parameres of 10) *L. pseudanticatus* sp.n.; 11) *L. anticatus anticatus* SHARP.



Fig. 12. Habitat of *Laccophilus seseanus* sp.n.: Rice fields near Bututumonga at Mt. Sesean, Southern Sulawesi.

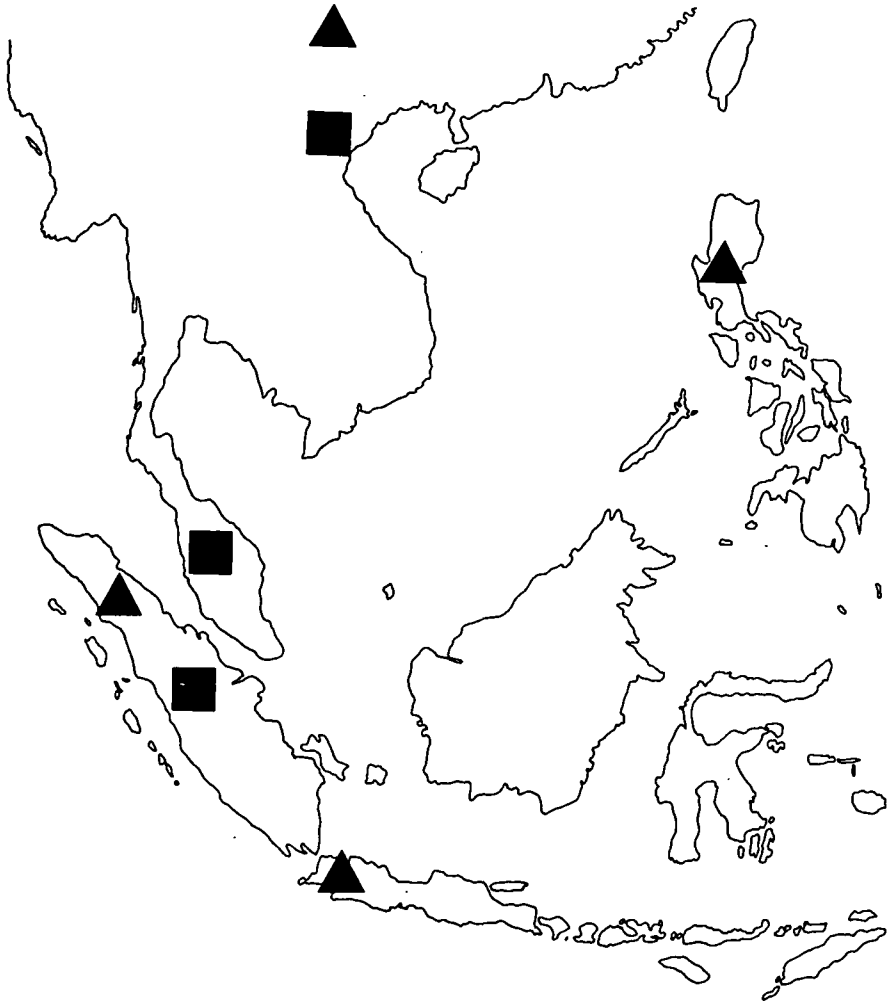


Fig. 13. Distribution of *Laccophilus minutus* (triangles) and *Laccosternus grouvellei* (squares) in Southeast Asia.